

Analysis of the cellular expression of checkpoint molecules on immune cells in patients with breast cancer

Mohamed Esmail¹, Sabry A. El-Naggar¹, Mohamed A. Saad², Sameh Abd-Elaziz³ and Mohamed L Salem¹

¹Zoology Department, Faculty of Science, Tanta University, Egypt

²Clinical Pathology, Faculty of Medicine, Tanta University, Tanta, Egypt

³Department of Oncology, Oncology Center, Faculty of Medicine, Mansoura University, Egypt

Background: Despite of the success of the breast cancer therapies, recurrence and metastasis still occur after treatment. These may be due to the immune cell suppression through immunoregulatory T cells (T reg) and immune checkpoint pathways such as programmed cell death protein 1 (PD-1) or programmed cell death ligand 1 (PDL-1) that expressed on circulatory tumor cells (CTCs). **Aim:** The present study aimed to analyze the phenotypic and the functions of immune T cells in the peripheral blood (PB) of breast cancer patients. Further to analyze the expression of checkpoint molecules (PD-1, PDL-1) on immune cells, also analyze the expression of PDL-1 on CTCs and cancer stem cells in (PB) of breast cancer patients, and correlated the results with clinical status of the patients compared to healthy woman. Blood samples were collected from breast cancer patients (n=28) at different stages (II, III, IV) before surgery compared to healthy individuals (n=10) to explore the significant role of T regulatory (Treg) cells, and the expression of PD-1 on immune T cells in (PB) of breast cancer patients. **Results:** The study showed the significant role of PDL-1 on circulatory tumor cells (CTCs) in peripheral blood of stages (III- IV) of breast cancer patients before and post chemotherapy. Our findings help us to understand the immunomodulatory nature of Treg, PD-1 expression on immune cells and PDL-1 expression on cancer cells. **Conclusion:** This study provides a better understanding of the nature of a recurrence and metastasis of breast cancer patients. Furthermore, recommended breast cancer patients need seriously to immunotherapy.

Keywords: Breast cancer; Circulatory tumor cells; Programmed cell death protein 1; Programmed cell death ligand 1; T regulatory cells

Editor-in-Chief: Prof. M.L. Salem, PhD - Article DOI: 10.21608/IJCBR.2021.61808.1168
